Cobalt Folliculitis

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• **Clinical observations in 60 cases of folliculitis or pronounced activation of acne in patients taking cobalt led to conclusion that the development or aggravation of the dermal lesions were owing to ingestion of the metal. The dermal manifestations abated when use of cobalt was discontinued. Active acne is considered a contraindication to the use of vitamin-iron-mineral supplements containing cobalt.**

Short courses of antibiotics in addition to regular acne regimen helped shorten the course of the eruption.

AN ANNOYING REACTION to the ingestion of cobalt chloride in hematinic and vitamin-mineral preparations has been observed by the authors.

Cobalt preparations combined with iron are being extensively used in therapy of certain anemias[2,9,10] and as general tonics. Except for reports of thyroid hyperplasia and hypothyroidism,[6,7] which have not been confirmed by additional studies,[3,4] no significant toxic manifestations in cobalt therapy have been published.

CLINICAL OBSERVATION

During the past two years, we have accumulated a series of 60 documented cases of folliculitis, acneform eruptions, and aggravation of preexisting acne in patients receiving cobalt chloride. The most severe manifestations appeared in patients who were taking cobalt-iron preparations, but others occurred in patients taking various vitamin-mineral combinations that contained cobalt. Vitamin B_{12} preparations containing cobalt given parenterally have also been found to produce similar skin manifestations in some instances. Care was taken to rule out the possibility of other trigger mechanisms as etiological factors before attributing the eruption to cobalt ingestion.

This reaction was observed in persons from 10 to 58 years of age, predominantly in females. In 20 cases, which have been classed as primary, the eruption developed in essentially normal skin. In 40 cases, classed as secondary, the eruption constituted an aggravation of existing acne or reactivation of preexisting acne. The period of ingestion of cobalt before the reactions appeared varied from one to ten weeks.

SKIN MANIFESTATIONS

In the primary cases, folliculo-pustules or papulopustules developed over the face and trunk. These lesions appeared in from three to ten weeks. Comedones were absent in this group.

In the secondary group, the pustular, nodular and cystic lesions of acne were aggravated, in most cases within one to three weeks after the patients began taking cobalt.

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After it was determined that folliculitis and aggravation of acne were ascribable to ingestion of cobalt, a group of patients with acne were given a cobalt-iron preparation by mouth. In all cases increased pustular activity developed within one to two weeks. Several patients without acne were also given a cobalt-iron combination and pustular lesions developed in two to four weeks in them also.

In addition, a number of patients with acne were given a weekly injection of vitamin B_{12} (cyanocobalamin), while a control group received injections of another vitamin without cobalt. Over 50 per cent of the group receiving vitamin B_{12} noticed a definite increase in pustular activity of acne three to four days after the injection. There was no similar activation in the control group.

BIOPSY

Biopsy of a typical lesion of the type occurring in previously normal skin showed a superficial abscess in the epidermis and upper corium with predominance of polymorphonuclear neutrophils (Figure 1). Follicular plugging was not seen.

THERAPY

In the primary group, the lesions tended to clear spontaneously after the elimination of cobalt. Disappearance of the folliculitis usually occurred gradually in four to six weeks. The rate of improvement appeared to be related to the severity of the eruption and the amount of cobalt ingested. The period of involvement could be greatly shortened by the use of antibiotics of the tetracycline group and erythromycin group.

In the secondary group, aggravation of the acne-

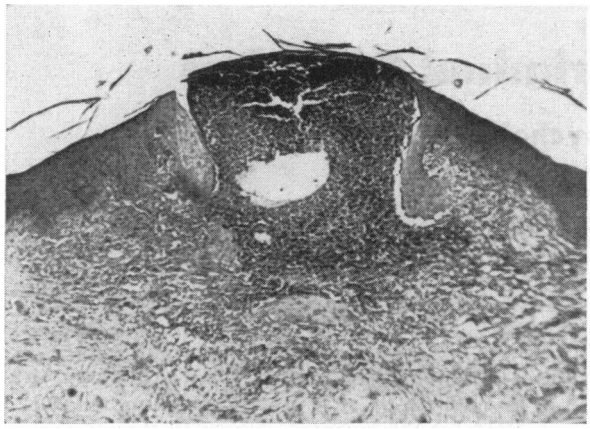

Figure 1.—Biopsy specimen of lesion occurring in previously normal skin. Note superficial abscess in epidermis and upper corium (×100).

form eruption was more persistent but again was shortened by the use of antibiotics in addition to routine acne therapy.

COMMENT

Investigative work, primarily by Faguet, at the Pasteur Institute,[1] has given a plausible explanation for the development of folliculitis in patients receiving cobalt. Faguet noted that the addition of small quantities of cobalt chloride increased the growth and multiplication of staphylococcus aureus in cultures. It is significant that these same studies, as well as others by different investigators, indicated that when penicillin, streptomycin or bacitracin were added to such cultures of staphylococcal aureus containing cobalt, the inhibitory effect of the antibiotic was enhanced[5,8,11] two to ten times. This probably is due to the fact that these antibiotics act on the bacteria during their dividing stage. No benefit was noted in similar cultures combined with oxytetracycline, chlortetracycline, chloramphenicol or polymyxin.

Since cobalt is tightly bound to the cyano group in cyanocobalamin, the mechanism of its action in aggravating folliculitis cannot be explained on the basis of the experimental work cited. Further investigation will be necessary to explain the increase in activity of acne in patients receiving vitamin B_{12} preparations.

In addition to the 60 documented cases in this report, an increasing number of cases have recently been observed. In view of this, an examination of vitamin-mineral combinations and hematinics available in our pharmacy was made. Forty-four preparations for oral use containing cobalt were found to be stocked and in common usage. These contained from 0.033 mg. to 3.7 mg. per capsule. Preparations containing the larger amounts of cobalt produced the most severe reaction.

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